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IS 1827 (1989): Pesticides - Dimethyl Amine SL Salts of 2, 4-D [FAD 1: Pesticides and Pesticides Residue Analysis]

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Indian Standard

PESTICIDES — DIMETHYL AMINE SL SALTS OF 2, 4-D — SPECIFICATION

(*Second Revision*)

UDC 632·951 DIM

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1990

Price Group 1

Pest Control Sectional Committee, AFCDC 6

FOREWORD

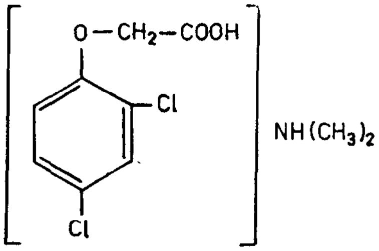
This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 23 August 1989, after the draft finalized by the Pest Control Sectional Committee had been approved by the Food and Agricultural Division Council.

Dimethyl amine SL salts of 2, 4-D, namely, 2, 4-dichlorophenoxy-acetic acid are extensively used in the control of weeds in agriculture and horticulture.

Soluble liquids (SL) dimethyl amine salts of 2, 4-D are manufactured to contain 22·5 and 58 percent (m/m) of 2, 4-D.

This Standard was published in 1961 and first revised in 1984. It has been revised again to update its requirements in the light of the experience gained.

The empirical and structural formulae and molecular mass of dimethyl amine SL salts of 2, 4-D are as indicated below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{10}H_{13}O_3NCl_2$		265·9

In the preparation of this standard due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PESTICIDES — DIMETHYL AMINE SL SALTS OF 2, 4-D — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for dimethyl amine SL salts of 2, 4-D.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
IS 1070 : 1977	Specification for water for general laboratory use (*second revision*)
IS 4321 : 1989	Specification of pesticides — 2, 4-D, technical (*second revision*)
IS 6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
IS 8190 (Part 2) : 1988	Requirements for packing of pesticides: Part 2 Solid pesticides (*second revision*)
IS 10627 : 1983	Methods for sampling of pesticidal formulations

3 REQUIREMENTS

3.1 Constituents

2, 4-D, technical employed in the formulation of this material shall conform to IS 4321 : 1989.

3.2 Description

The material shall be in the form of liquid and free from extraneous impurities.

3.3 Identity Test

The material shall comply with the identity test when tested by the method prescribed in Annex A.

3.4 The material shall also comply with the requirements given in Table 1.

3.4.1 *Extractable Acid Content*

When determined by the method prescribed in Annex C, the observed extractable acid content (expressed as 2, 4-D), percent (m/m) of any of the samples shall not differ from the declared nominal value by more than the percent tolerance limits indicated below:

Nominal Value, Percent	*Tolerance, Percent*	
Up to 9	+ 10 − 5	of the nominal value
Above 9 and below 50	± 5	
50 and above	+ 5 − 3	

3.4.1.1 The actual value of extractable acid content (expressed as 2, 4-D) shall be calculated to the second decimal place for rounding off to the first decimal place before applying the tolerances given under **3.4.1**.

3.4.1.2 The average 2, 4-D content of all the samples taken shall not be less than the declared nominal content.

4 PACKING

The material shall be packed according to the requirements given in IS 8190 (Part 2) : 1988.

5 MARKING

The following information shall be marked legibly and indelibly on each container besides any other information required under the *Insecticides Act*, 1968 and Rules:

a) Name of the material;
b) Name of the manufacturer;
c) Date of manufacture and date of expiry;
d) Batch number;
e) Nominal acid content, percent (m/m);
f) Net mass of the contents; and
g) The minimum cautionary notice worded as in the *Insecticides Act*, 1968 and Rules.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 10627 : 1983.

7 TESTS

7.1 Tests shall be carried out as referred to in col 4 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

Table 1 Requirements for Dimethyl Amine SL Salts of 2, 4-D

(*Clauses* 3.4 *and* 7.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of Standard	Clause of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
(i)	Acid content (expressed as 2, 4-D), percent by mass	Nominal value as declared on the container (*see* **3.4.1**)	B	—
(ii)	Melting point of the extracted acid, °C	136 to 140	C	—
(iii)	Alkalinity (as NaOH), percent by mass, *Max*	0·03	—	13 5

ANNEX A

(*Clause* 3.3)

IDENTITY TEST

A-1 REAGENTS

A-1.1 Sodium Nitroprusside Solution, 1 percent (*m/v*).

A-1.2 Acetaldehyde Solution, 10 percent (*m/v*).

A-1.3 Sodium Carbonate Solution, 2 percent (*m/v*).

A-2 PROCEDURE

Transfer 1 ml of the sample by pipette to a test tube. Add 5 ml freshly prepared mixture of 2·5 ml of sodium nitroprusside solution and 2·5 ml of acetaldehyde solution. Add 5 ml of sodium carbonate solution and shake well. A dark blackish to brownish colour is produced after 5 minutes.

ANNEX B

[*Table* 1, *Item* (i)]

DETERMINATION OF EXTRACTABLE ACID CONTENT

B-1 REAGENTS

B-1.1 Dilute Hydrochloric Acid, 1 : 1 (*v/v*).

B-1.2 Diethyl Ether

B-1.3 Absolute Alcohol, neutral, alternatively methyl alcohol, neutral may be used.

B-1.4 Bromothymol Blue Indicator Solution, 0·04 percent (*w/v*) in alcohol.

B-1.5 Methyl Orange Indicator Solution

B-2 PROCEDURE

Weigh accurately a quantity of the material so as to contain about 1 g of 2 4-D and add to it 10 ml of water. Transfer the mixture completely to a 250-ml separating funnel using minimum quantity of water. Acidify the solution with dilute hydrochloric acid using methyl orange indicator. Extract the aqueous phase with three successive portions of 25 ml diethyl ether. Combine the ether extract in a second separating funnel and wash the first separating funnel with small quantities of ether and transfer it to the second separating funnel. Then wash the ether extract with successive portions of distilled water until the ether solution is free of chloride ions. Transfer the ether solution to a 250 ml Erlenmeyer flask. Add 80 ml neutral alcohol and titrate with standard sodium hydroxide solution using bromothymol blue as indicator to a green colour end point. A blank determination shall be carried out, and correction made, if necessary.

B-3 CALCULATION

Acid (2, 4-D) content, percent by mass

$$= \frac{V \times N \times 22\cdot1}{M}$$

where

V = volume, in ml, of the standard sodium hydroxide required for the test;

N = normality of the standard sodium hydroxide solution; and

M = mass, in g, of the material taken for the test.

ANNEX C

[*Table* 1, *Item* (ii)]

DETERMINATION OF MELTING POINT OF THE EXTRACTED ACID

C-1 PROCEDURE

Extract (2, 4-D) acid as per the method given in Annex B (*see* **B-2**). Evaporate ether to dryness. Determine the melting point of the finely powdered residue as per method given in **6** of IS 6940 : 1982.

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TO
IS 1827 : 1989 PESTICIDES — DIMETHYL AMINE SL SALTS OF 2, 4-D — SPECIFICATION

(Second Revision)

(*Page* 1, *clause* **6**) — Substitute the following for the existing:

'When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 : 1983 within 90 days of its manufacture. When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627 : 1983. However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under clause **3.4.1** of the standard.'

(FAD 1)

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